

Chapter Sixty

OTHER
DEPARTMENT MANUALS

BUREAU OF DESIGN AND ENVIRONMENT MANUAL

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Chapter Sixty

OTHER DEPARTMENT MANUALS

The *Bureau of Design and Environment Manual (BDE Manual)* includes the necessary information on the topics discussed in the *Manual* for the vast majority of roadway projects designed by the districts. However, it does not present all information that may be required by the designer on all projects. For specific projects or for specific project elements, the road designer may need to reference other publications to perform a fully comprehensive analysis of the project. Chapter 60 briefly discusses other publications available by the Department's Division of Highways that are often required by the designer for a roadway project. The designer may also need to review the national highway engineering literature to research a specific problem or to design special elements. Summaries of national documents can be found in the publication catalogs of the organization (e.g., AASHTO, ITE).

60-1 GENERAL

For in-house designers, copies of most documents are available on the Policy and Research Center intranet site. For consultants and other individuals, these documents can be purchased from the Division of Highways — Manual Sales Office. Make all checks or money orders payable to the *STATE TREASURER OF ILLINOIS*. A list of available documents can be found on the Department's internet site (<http://www.dot.state.il.us>) or by contacting the Manual Sales Office.

60-2 BUREAU OF DESIGN AND ENVIRONMENT

In addition to the *BDE Manual*, the Bureau of Design and Environment is responsible for maintaining the documents in the following Sections.

60-2.01 IDOT Coded Pay Items

Every pay item has a unique assigned number for data processing. The *IDOT Coded Pay Items* provides a listing of all pay items and numbers used by the Department for a project. These numbers and titles are tied to the *Standard Specifications*. Only use these numbers and descriptions in the plans and estimates. Both US Customary and metric pay items are presented in the *IDOT Coded Pay Items*.

Part VII of the *BDE Manual* provides additional information on how to use the *IDOT Coded Pay Items* during plan development.

60-2.02 Standard Specifications for Road and Bridge Construction

The *Standard Specifications for Road and Bridge Construction (Standard Specifications)* are the specifications adopted by the Department for work methods, materials, and basis of payment used in construction. The *Standard Specifications* are intended for general repetitive use. They provide Department criteria for:

- bidding,
- awarding the contract,
- the contractor's duties,
- controlling the material quality,
- the contractor's and the Department's legal requirements,
- executing the contract, and
- measuring and paying for construction.

See Section 66-1.02 for more information on the *Standard Specifications*.

60-2.03 CADD Roadway and Structure Project Deliverables Policy

The *CADD Roadway and Structure Project Deliverables Policy (Deliverables Policy)* contains requirements and procedures for computer-aided drafting and design. The *Deliverables Policy* addresses:

- project file requirements,
- data transfer,
- coordination,
- design file management,
- file naming conventions, and

- various FAQ's.

60-2.04 CADD Roadway Drafting Reference Guidelines

The *CADD Roadway Drafting Reference Guidelines* contains MicroStation and Geopak configuration information, detailing guidelines, and other resources necessary for the preparation of roadway plans for the Department.

60-2.05 Highway Standards

The *Highway Standards* provide details for laying out or constructing various design elements that are consistent from project to project (e.g., guardrail, curb and gutter, signs, fencing, landscaping). The *Highway Standards* contain both US Customary and metric units. The *Highway Standards* are developed by BDE in collaboration with other bureaus. See Section 66-1.05 for more information on the *Highway Standards*.

60-2.06 Survey Manual

The *Survey Manual* provides the Department's survey policies and regulations. It includes:

- a discussion of geodetic surveying covering datums, State-plane coordinates, and geodetic surveying;
- design surveys;
- photogrammetric surveys covering accuracy requirements as well as GPS procedures;
- land surveys, which includes a discussion of the public land surveys;
- construction surveys, which includes staking procedures;
- a chapter on safety designed to eliminate crashes and property damage; and
- several appendices with more in-depth discussion of curves, specifications for different types of surveys, survey point codes, and confined space entry policy.

60-2.07 Community Impact Assessment Manual

The purpose of this *Manual* is to present information to be used in socioeconomic or community impact assessments, identify data sources, and aid in the evaluation of alternatives for transportation improvements. This *Manual* is designed to provide accurate, clear, and consistent information to assist IDOT personnel and consultants in completing community/socioeconomic impact documentation. The *Manual* encompasses the socioeconomic or community impacts of the environmental assessment process from initiation

of a highway project through the various stages of project development, to the concluding stages of the preparation of final documentation. In addition, the *Manual* includes suggestions for mitigation and enhancement efforts that may be appropriate for various projects.

60-3 BUREAU OF BRIDGES AND STRUCTURES

The Bureau of Bridges and Structures is responsible for the following documents.

60-3.01 Bridge Manual

The *Bridge Manual* is a compilation of design procedures, plan presentation guidelines, specifications interpretation, standard practices, design details, and base sheets for bridges and other structures. It includes:

- a discussion on the organization of the Bureau of Bridges and Structures;
- plan preparation checklists for TS&L and final plans;
- sample plan sheets;
- a discussion on the Department's bridge planning process;
- preliminary bridge investigation techniques;
- bridge geometric criteria;
- structure rehabilitation techniques;
- utility attachments on structures; and
- design criteria for decks, structural steel, expansion devices, bearings, abutments, piers, piles, embankment and slope walls, and other miscellaneous details.

There are both US Customary and metric versions of the *Bridge Manual*.

60-3.02 Culvert Manual

The *Culvert Manual* is a compilation of design procedures, design charts and tables, standard details, and base plan sheets which are used to aid in the design and detailing of:

- simple-span, reinforced concrete box culverts;
- precast concrete box culverts;
- horizontal cantilever wingwalls;
- vertical cantilever, L-type wingwalls; and
- vertical cantilever, T-type wingwalls.

There are both US Customary and metric versions of the *Culvert Manual*.

60-3.03 Prestressed Concrete Manual

The *Prestressed Concrete Manual* is a compilation of design procedures, design charts and tables, examples, standard details, and base plan sheets that are used to aid in the design and detailing of Illinois standard precast, prestressed concrete bridge beams.

60-3.04 Sign Structure Manual

The *Sign Structures Manual* presents guidelines for the selection of sign supports, sign support design details, and CADD criteria for incorporating traffic signs into the plans. The following types of sign structures are discussed in the *Sign Structures Manual*:

- simple-span sign structures,
- cantilever sign structures,
- bridge-mounted sign structures,
- monotube sign structures,
- break-away wide flange steel sign posts, and
- break-away tubular steel sign posts.

60-3.05 CADD Structures Drafting Reference Guide

The *CADD Structures Drafting Reference Guide* contains MicroStation configuration information, detailing guidelines, and other resources necessary for the preparation of structure plans for the Department.

60-3.06 Drainage Manual

The *Drainage Manual* is a compilation of the Department's policies and criteria on drainage and hydraulics for road and bridge projects. The *Drainage Manual* provides guidance on:

- division of responsibility for drainage,
- legal requirements,
- drainage policies,
- permits,
- preparation of drainage studies and hydraulic reports,
- floodplain encroachments,
- hydrology,
- open channel flow,
- culvert hydraulics,
- bridge hydraulics,
- storm sewers,
- roadside ditches,
- erosion and sediment control,

- scour,
- detention storage,
- pumping stations, and
- rules for construction in rivers, lakes, and streams.

60-3.07 Structural Services Manual

The *Structural Services Manual* provides guidance and information on the maintenance and repair of existing structures. It includes information on:

- plan preparation and review responsibilities,
- bridge inspections,
- bridge deck overlays,
- expansion joint replacement,
- longitudinal joint closure,
- bridge rail and parapet repair and replacement,
- deck drains,
- bearing replacements,
- jacking and cribbing,
- pin and link replacement,
- fatigue,
- impact repairs for steel and concrete beams,
- steel and concrete superstructure repairs,
- guidelines for bridge deck repair, and
- substructure repairs.

60-3.08 Geotechnical Manual

The *Geotechnical Manual* addresses the application and treatment of soils and foundations on State projects. It presents guidance and information on:

- geotechnical investigation requirements;
- geotechnical analyses of subgrades, embankments, cut slopes, and foundations;
- recommendations for design problems involving embankments, cut slopes, peat deposits, frost action, drainage, and foundations;
- preparation and submittal of Geotechnical Reports;
- geotechnical engineering aspects for construction;
- the State's geology and pedology;
- laboratory and field testing of soils;

- Illinois' modified testing procedures and methods; and
- geotechnical glossary.

60-3.09 Bridge Manual Design Guides

The *Bridge Manual Design Guides Manual* is a compilation of various design elements on CADD that are commonly found on bridge and other structures projects. The *Manual* provides examples of TSL plans that indicate a range of grade separation and stream crossing structures, as well as retaining walls that have been developed to provide planners with a quick reference for bridge planning policy and presentation methods.

60-3.10 Bridge Condition Report Procedures and Practices

This document is a guideline for preparing Bridge Condition Reports for the improvement of roadway structures and was developed to provide the wide range of information necessary to complete reports for various types of bridge projects. The guideline reviews background information, field inspection, and testing (in brief), general analysis procedures and report preparation. Example Bridge Condition Report formats are provided in the document.

60-4 BUREAU OF CONSTRUCTION

The Bureau of Construction is responsible for the *Construction Manual*. The *Construction Manual* expands on the *Standard Specifications for Road and Bridge Construction* and provides guidelines for uniform field inspection and documentation procedures on highway construction. It contains explanatory information on:

- contract administration;
- earthwork;
- landscaping;
- temporary erosion control;
- subgrades, subbases, and base courses;
- surfacing;
- structures including concrete, steel, and timber structures;
- piling;
- reinforcing bars;
- culverts;
- curb and gutter;
- chain link and woven wire fencing;
- traffic control;
- construction memoranda;
- documentation and project procedure guidelines;
- inspection checklists; and
- construction forms and reports.

60-5 BUREAU OF LAND ACQUISITION

The Bureau of Land Acquisition is responsible for the Land Acquisition Policies and Procedures Manual. The Land Acquisition Policies and Procedures Manual presents information on:

- the organization, functions, and activities of the Bureau of Land Acquisition;
- preparation of right-of-way plans;
- programming of right-of-way projects;
- land surveying criteria;
- development of right-of-way plats;
- legal descriptions for right-of-way;
- guidelines for designing the right-of-way;
- administration of incidental land surveying services;
- policies and procedures for appraisals and appraisal reviews;
- policies and procedures for negotiations;
- policies and procedures for acquisition;
- policies and procedures for property management of State property;
- policies and procedures for relocation assistance and payment program; and
- other miscellaneous Land Acquisition policies and procedures.

60-6 BUREAU OF LOCAL ROADS AND STREETS

The Bureau of Local Roads and Streets is responsible for the *Local Roads and Streets Manual*, which replaces the *Administrative Policies* and *Federal-Aid Procedures Manuals*, used previously.

The *Local Roads and Streets Manual* provides information on:

- the Bureau of Local Roads and Streets' responsibilities for vouchering the State's motor fuel tax funds and township bridge funds to the local agencies;
- local agency (i.e., municipalities, counties, and road districts) responsibilities for maintaining complete records of disbursements, refunds, transfers, and balances involving all State funds transferred to the local agencies;
- design guidelines for local roads and streets including functional classification, engineering analyses, roadway design, traffic control devices, pavement design, bridges and culverts, and hydraulics;
- guidelines for addressing right-of-way acquisitions, railroads, and utilities;
- policies and procedures for preparing plans, specifications, estimates, proposals, contracts, highway system revisions, resolutions, agreements, and other miscellaneous documents;
- letting, award, and construction procedures;
- maintenance administration and operations for local facilities; and
- guidelines and procedures for projects involving Federal funding, including:
 - + environmental analyses and reports;
 - + public involvement guidelines; and
 - + FHWA coordination, review, and approval.

60-7 BUREAU OF OPERATIONS

The Bureau of Operations is responsible for the following documents.

60-7.01 Traffic Policies and Procedures Manual

The *Traffic Policies and Procedures Manual* presents guidelines for the uniform placement of traffic control devices and the application of traffic control policies and procedures. It contains guidance and information on:

- statutory and administrative requirements for traffic control devices;
- information-gathering procedures and data sources;
- traffic engineering studies and investigations including accident studies, speed studies, warrant studies, observance studies, time and delay studies, and school-zone safety;
- plan preparation including agreements, contracts, specifications, etc., for traffic plans;
- the selection, design, and placement of signing, pavement markings, traffic signals, object markers, delineation, rumble strips, traffic control in work zones, bikeways, and highway and sign lighting;
- permits including access control, special vehicular movements, road closures for local celebrations, utilities, snowmobiles on State routes, and other miscellaneous permits; and
- the State's highway safety program.

60-7.02 Illinois Standard Highway Signs

The *Illinois Standard Highway Signs* illustrates the layout and design details for the highway signs used by the Department. It includes the MUTCD number, allowable sign sizes, and design details for:

- regulatory signs,
- warning signs,
- construction signs,
- guide signs,
- general information signs,
- motorist services signs,
- civil defense signs, and
- school signs.

60-7.03 Illinois Manual for Uniform Traffic Control Devices

the *Illinois Manual for Uniform Traffic Control Devices* (ILMUTCD) consists of the *Illinois Supplement to the MUTCD* and the *FHWA Manual on Uniform Traffic Control Devices* (MUTCD). Note that there is not actually a document entitled the *Illinois Manual for Uniform Traffic Control Devices*. Wherever a publication refers to the *Illinois Manual for Uniform Traffic Control Devices*, the user should first review the *Illinois Supplement to the MUTCD* and, if it does not address the issue, the user should then use the criteria in the *FHWA Manual on Uniform Traffic Control Devices*. These combined documents address the selection, design, and placement of traffic control devices on State facilities.

The *Illinois Supplement to the MUTCD* presents criteria and guidance specific to Illinois which may vary or which are in addition to the FHWA *MUTCD*. It includes:

- reprint of the applicable sections from the *Illinois Vehicle Code* which pertain to traffic control devices;
- revisions and additions to the FHWA *MUTCD* traffic control devices for signing, pavement markings, traffic signals, construction signing, schools, and railroads; and
- a table of Illinois standard signs.

60-8 BUREAU OF MATERIALS AND PHYSICAL RESEARCH

The Bureau of Materials and Physical Research is responsible for the following documents.

60-8.01 Manual of Test Procedures for Materials

This *Manual* presents the Department's criteria for sampling and test procedures for evaluating the following materials for road and bridge construction:

- aggregates,
- hot-mix asphalt, and
- Portland cement concrete.

60-8.02 Manual for Materials Inspection

This *Manual* is authorized by Department Policy MAT-11, November 2000.

The *Manual* is a guide for the inspection of metals, plastics, chemicals, admixtures, and other miscellaneous materials. It generally covers materials that are not soils, hot mix, concrete or aggregates.

